

Notice of Allowability

Application No.

10/789,810

Examiner

Omar F. Fernández Rivas

Applicant(s)

GOLDBERG ET AL.

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to an amendment filed on 10/11/2007.
2. ☒ The allowed claim(s) is/are 1-56.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date A1, A2
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT filed by the Applicant entered on October 11, 2007.
2. Claims 1-56 are allowed.

Allowable Subject Matter

3. The following is an examiner's statement of reasons for allowance: claims 1-56 are considered allowable since when reading the claims in light of the specification, as per MPEP § 2111.01, In re Donaldson Co., Inc., 29 USPQ 2d 1845, 1850 (Fed. Cir. 1994), or In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385 (Fed. Cir. 1983), none of the references of record alone or in combination disclose or suggest the combination of limitations specified in the independent claims, especially "wherein the individual activity counters are incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict" (as defined e.g. at page 8, paragraph 22; page 13, paragraph 37; mpages 9-10, paragraphs 27-29 of the instant application) or "wherein the branching variable is selected based upon a high activity counter" (as defined e.g. at page 8, paragraph 22), as described in independent claims 1, 31 and 41.

Marques-Silva et al. "GRASP: A Search Algorithm for Propositional Satisfiability" discloses an algorithm for solving propositional satisfiability problems. The algorithm searches for clauses in conflict during a search.

Moskewicz et al. "Chaff: Engineering an Efficient SAT Solver" discloses an SAT solver using an optimized Boolean Constraint Propagation algorithm to determine a satisfying variable assignment for a Boolean function.

Bayardo et al discloses an enhanced version of the Davis-Putnam algorithm for solving satisfiability problems.

Biere et al. "Symbolic Model Checking Using SAT Procedures Instead of BDD's" discloses a comparison between using SAT-based techniques and BDD approaches in hardware verification.

However, none of the references alone or in combination disclose "wherein the individual activity counters are incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict" or "wherein the branching variable is selected based upon a high activity counter", as described in independent claims 1, 31 and 41

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Franco et al. US Patent #6,912,700

Walser US Patent #6,031,984

Keyrouz et al. US Patent #5,617,510

Franco et al. US Patent #6,912,700

5. Claims 1-56 are allowed.

Correspondence Information

6. Any inquires concerning this communication or earlier communications from the examiner should be directed to Omar F. Fernández Rivas, who may be reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-2589 or email omar.fernandezrivas@uspto.gov.

If you need to send an Official facsimile transmission, please send it to (571) 273-8300.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, David Vincent, may be reached at (571) 272-3080.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

Omar F. Fernández Rivas
Patent Examiner
Artificial Intelligence Art Unit 2129
United States Department of Commerce
Patent & Trademark Office

Wednesday, October 31, 2007



DAVID VINCENT
SUPERVISORY PATENT EXAMINER